

CLAIMS

1. A power unit comprising: a combustion engine as a prime mover for driving devices; auxiliary machinery for the combustion engine; an electric motor; a generator; and a Stirling engine operated by a working gas to drive the generator;

wherein the Stirling engine has a heater that uses waste heat produced by the combustion engine for heating the working gas, the battery is connected to the electric motor to supply power to the electric motor, the generator is connected to the electric motor and the battery to supply generated power to the electric motor and the battery, and the electric motor is connected to the auxiliary machinery to drive the auxiliary machinery.

2. The power unit according to claim 1 further comprising an engine speed control means for adjusting the engine speed of the Stirling engine to an optimum engine speed at which the Stirling engine produces a maximum or substantially maximum brake horsepower.

3. The power unit according to claim 1 or 2, wherein the auxiliary machinery is an auxiliary machine group including a plurality of auxiliary machines, the auxiliary machines of the auxiliary machine group are connected through a transmission mechanism including clutches to the combustion engine, the clutches are engaged and disengaged to drive the plurality of auxiliary machines selectively by the combustion engine or the

electric motor, and a control system determines selectively, the number of the auxiliary machines to be driven by the electric motor.

4. The power unit according to claim 3, wherein the combustion engine is interlocked with a first one of the auxiliary machines by a first clutch, the auxiliary machine interlocked with the combustion engine is interlocked with the electric motor by a second clutch, the electric motor is operatively connected to the rest of the auxiliary machines, and the first and the second clutch are controlled by a control system so as to be engaged or disengaged according to the operating condition of the power unit.

5. The power unit according to claim 4, wherein the control system is operative to engage both the first and the second clutch to connect the combustion engine operatively to all the auxiliary machines when the combustion engine is operating in a low-load operation range and sufficient power cannot be supplied to the electric motor.

6. The power unit according to claim 4, wherein the control system is operative to disengage the second clutch and connect the auxiliary machines excluding the first auxiliary machine to the electric motor when the power for driving only the auxiliary machines excluding the first auxiliary machine is supplied to the electric motor while the combustion engine is operating in a middle-load operation range, whereby the

auxiliary machines excluding the first auxiliary machine are driven by the electric motor.

7. The power unit according to claim 4, wherein the control system is operative to disengage the first and the second clutch and connect all the auxiliary machines to the electric motor when power sufficient for driving all the auxiliary machines is supplied to the electric motor while the combustion engine is operating in a high-load operation range.